

Sphenoid wing meningioma

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Definition

A [sphenoid wing meningioma](#) is a type of [skull base meningioma](#) that originates from the [meninges](#). Specifically, this type of meningioma arises near the [sphenoid bone](#).

This portion of the dura mater covers the lesser wing of the [sphenoid bone](#) from the [anterior clinoid process](#) (ACP) to the [pterion](#).

Epidemiology

Sphenoid wing meningiomas, or ridge meningiomas, are the most common [anterior skull base meningioma](#) and have a relative incidence of 17%.

see also [Intracranial meningioma epidemiology](#).

Classification

see [Sphenoid wing meningioma classification](#).

Clinical Features

see [Sphenoid wing meningioma clinical features](#)

Diagnosis

[Sphenoid wing meningioma diagnosis](#).

Differential diagnosis

The differential diagnosis for sphenoid wing meningioma includes other types of tumors such as [optic nerve sheath meningioma](#), cranial [osteosarcoma](#), [metastases](#), and also [sarcoidosis](#).

Treatment

see [Sphenoid wing meningioma treatment](#).

Outcome

see [Sphenoid wing meningioma outcome](#).

Case series

see [Sphenoid wing meningioma case series](#).

Case reports

2014

Endo et al. report the utility of a pulsed water jet device in meningioma surgery. The presented case is that of a 61-year-old woman with left visual disturbance. MRI demonstrated heterogeneously enhanced mass with intratumoral hemorrhage, indicating sphenoid ridge meningioma on her left side. The tumor invaded the cavernous sinus and left optic canal, engulfing the internal carotid artery in the carotid cistern and encased middle cerebral arteries. During the operation, the pulsed water jet device was useful for dissecting the tumor away from the arteries since it was safe in light of preserving parent arteries. The jet did not cause any vascular injury and did not induce vasospasm as shown by postoperative symptomatology and MRIs. With the aid of pulsed water jet, we could achieve total resection of the tumor except for the piece within the cavernous sinus. The patient had no new neurological deficits after the operation ¹⁾.

Left frontobasal meningioma known to currently measure approximately 41x25x34 mm (previously 38x23x30 mm APxTxCC), causing a similar mass effect on the left lateral ventricle, slightly collapsing

it, and deviating the midline to the right by about 4 mm (similar to before), with no signs of subfalcine herniation.

Extensive white matter involvement consistent with advanced chronic small vessel ischemia (Fazekas 3), stable. Corticosubcortical atrophy with some parietotemporal predominance, without significant changes. No signs of acute ischemia or intra- or extra-axial hemorrhage are observed. Mucosal occupation of mastoid air cells.

Case reports from the HGUA

Q12392

A 48-year-old female diagnosed with a large right [sphenoid wing meningioma](#) who underwent [sphenoid wing meningioma surgery](#). The postoperative course was complicated by an intraparenchymal hematoma, infarction of the right basal ganglia, and ventricular hemorrhage, ultimately leading to death on the sixth postoperative day. This case highlights the challenges associated with managing meningiomas involving critical neurovascular structures and underscores the importance of addressing perioperative complications to improve outcomes.

Introduction Meningiomas involving the sphenoid wing are surgically challenging due to their proximity to vital neurovascular structures such as the optic nerve, internal carotid artery (ICA), and cavernous sinus. While resection is often curative, significant morbidity and mortality can result from perioperative complications. This report describes the clinical course and outcome of a patient who experienced devastating complications following surgery for a sphenoid wing meningioma.

Case Presentation Patient Details: A 48-year-old female presented with progressive headaches, visual disturbances, and left-sided hemiparesis. Preoperative imaging revealed a large right sphenoid wing meningioma measuring 60 x 48 x 46 mm, causing significant mass effect and displacement of midline structures.

Preoperative Imaging:

MRI Brain:



Extra-axial lesion originating from the right sphenoid wing. Intense enhancement post-contrast with a superior atypical component showing restricted diffusion. Significant mass effect: midline shift of 6 mm and collapse of the right lateral ventricle. Compression of the optic chiasm and right cavernous sinus involvement. **Surgical Management Procedure:** The patient underwent a right fronto-temporal craniotomy.

Sphenoid wing drilling and dural opening were performed. The tumor was dissected from the Sylvian fissure, ICA, and optic nerve, with a small residual adherent component coagulated. Complete resection of the main tumor bulk was achieved, including the portion encasing the pituitary stalk and displacing the optic chiasm. **Postoperative Course Day 1-3:**

Neurological findings: Left-sided hemiparesis with stupor but retained ability to follow commands.



Imaging showed a right basal ganglia infarction with intraparenchymal and ventricular hemorrhage. Day 4-5:

Neurological deterioration with persistent stupor despite sedation weaning. EEG: Disorganized background with focal slow waves, no seizures. Hemodynamic and respiratory status remained stable on ventilatory support. Day 6:

Further neurological decline with non-reactive pupils. Cardiorespiratory arrest occurred, and resuscitation efforts were unsuccessful. The patient was pronounced dead on postoperative day six. Discussion Surgical and Postoperative Challenges: Sphenoid wing meningiomas pose significant surgical risks due to their proximity to critical neurovascular structures. This case highlights the challenges of achieving complete resection while minimizing vascular complications. The development of a basal ganglia infarction and hemorrhage likely resulted from vascular compromise during tumor dissection.

Complications and Mortality: Despite meticulous surgical technique, the patient developed severe complications, including:

Intraparenchymal and intraventricular hemorrhage. Basal ganglia infarction with resultant mass effect and neurological decline. These complications ultimately proved fatal, despite intensive postoperative management. Conclusion This case underscores the complexity of managing large sphenoid wing meningiomas and the potential for catastrophic complications even with optimal surgical and critical care. Early recognition and aggressive management of perioperative complications are essential to improving patient outcomes. Mortality in such cases highlights the importance of multidisciplinary care and tailored surgical strategies for high-risk patients.

Extra-axial mass located in the right frontobasal-temporal region, appearing to originate from the medial convexity of the temporal fossa. The mass measures approximately 60 x 48 x 46 mm (transverse x craniocaudal x anteroposterior) and exhibits two distinct regions:

Larger Region:

Features typical of a meningioma. Isointense on T1- and T2-weighted sequences. No diffusion restriction. Shows intense enhancement following contrast administration. Superior and Lateral Region:

Measures 53 x 32 mm. No enhancement observed. Demonstrates marked diffusion restriction, suggestive of an atypical variant. No areas of evident hemorrhage, necrosis, or cystic degeneration are identified. There is also no associated perilesional edema.

Mass Effects:

Extends to the right cavernous sinus. Displaces the pituitary stalk and the optic chiasm to the left. In intimate contact with the cranial border of the right internal carotid artery, which maintains a preserved morphology. Collapses the right lateral ventricle and displaces the midline by 6 mm. Causes asymmetry in the perimesencephalic cisterns. The cerebellar tonsils are in their normal position. Conclusion: Suggestive of a meningioma, with a superior and lateral portion demonstrating atypical behavior. Mass effect on adjacent structures.

1)

Endo T, Nakagawa A, Fujimura M, Sonoda Y, Shimizu H, Tominaga T. [Usefulness of pulsed water jet in dissecting sphenoid ridge meningioma while preserving arteries]. No Shinkei Geka. 2014 Nov;42(11):1019-25. doi: 10.11477/mf.1436200025. Japanese. PubMed PMID: 25351797.

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